

ABSTRACT OF THE DISCLOSURE

The present invention relates to an electric machine presenting a constructive base form that enables said machine to be used both as a motor and as a generator and to provide a high yield of the air-core coil on the smallest area possible for rotating and linear movements. In the case of the present constructive base form, the air-core coil comprises two coil sides which are located opposite from opposed magnetic poles when the energy conversion is maximal and have thus a complementary action. The air-core coil, which is not in contact with the reflux material, is approximately located at the center of an air gap formed by a field device or an air gap comprising one or more air-gap sections, and is capable of displacement relative to said sections. Each coil side extends through the air gap sections, has geometrical shape that changes at its section in a direction transverse to the displacement direction, is curved or bent about at least one body of the field device and is essentially located within the air gap. The structure of the air gap and of the air-core coils located therein provides an optimal compliance to M. Faraday's ideal conditions concerning energy conversion during the relative displacement between an electric lead and the magnetic field, and also ensures an optimal quantitative and qualitative yield of the copper within said air-core coils. This invention can be used in the production of highly compact machines, which results in numerous other advantages in terms of applications, manufacturing and production costs. These machines and the high yield they offer can be use, e.g., as motors for extremely rapid adjustment operations or as driving mechanisms for vehicles and as generators for lighting dynamos in vehicles or for wind energy plants.

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